Fitzpatrik L. S. The Association of ideas in English Composition.

1948

FOR REFERENCE
o Not Take From This Room

BOSTON UNIVERSITY
SCHOOL OF EDUCATION
LIBRARY

Ed.
Thesis
FitzPatrick, L.S.
1948

The Gift of Lloyd S. FitzPatrick Stored

FOR REFERENCE
Do Not Take From This Room

Thesis
FitzPatrick, L.S.
1948
Stored

BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Thesis

THE ASSOCIATION OF IDEAS IN ENGLISH COMPOSITION

Submitted by

Lloyd S. FitzPatrick

(B.A. in English Literature, Massachusetts State College, 1944)

In Partial Fulfillment

of Requirements for the Degree of

Master of Education

1948

First Reader: Donald D. Durrell, Professor of Education

Second Reader: Mary M. Jones, Visiting Instructor of Education

Third Reader: Helen A. Murphy, Associate Professor of Educationn

Boston University
School of Education
Library

School of Education
Gift of L. S. Fitzpatrick,
August 16, 1918
29846

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	The Definition of Association	1
	Historical Development of Association	2
	The Present Function of Association	8
	Objectives of This Study	11
II.	RESEARCH IN THE AREA	14
	The Formation of Associations	14
	Early Association Tests	16
	Association and Personal Traits	19
	Association and A-social Tendencies	23
	Association and Intelligence	25
	Association and Reading Ability	27
	Summary of Chapter Two	28
III.	THE TESTING PROGRAM	31
	The Test for the Association of Ideas	31
	Scoring the Test	33
	Administration of the Test	35

CHAPTER PAGE

Evaluation of the Test Data..... 41

IV. SUMMARY AND CONCLUSIONS..... 45

Summary..... 45

Suggestions for Teaching Association..... 47

Problems for Further Research..... 51

BIBLIOGRAPHY..... 53

APPENDIX..... 57

Data Compiled for the Study..... 57

CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

I. THE DEFINITION OF ASSOCIATION

The association of ideas is a psychological conception of a specific thinking process. This thinking activity produces, in the mind of an individual, idea relationships between a present stimulus situation and familiar previous experience or learned knowledge. "Briefly stated, association is an attempt to explain the order of ideas in terms of the connection established by earlier experiencing of the same ideas or of the objects to which the ideas are referred."[1/] In this study, the term "association" will apply to that mental process by which an external stimulus, recognized by the individual, prompts the recall of an intrinsic learned and generally habitual response. Stated more simply, association means that when we perceive an object or sound, ideas, related to earlier experiences, are quickly aroused in our minds. It may be logical to assume, then, that the ability to associate ideas may be proportionate to the individual's earlier experience and training; investigation in the field has seemed to

---

1/ A Cyclopedia of Education, ed. Paul Monroe, the MacMillan Company, 1911, Vol. I, p. 248.

indicate that intelligence has a limited influence on the associative process. The mind processes which we call memory, retentiveness, recall, recognition, and imagery, are derivations of the broader concept of association.

II. HISTORICAL DEVELOPMENT OF ASSOCIATION

Association of ideas is perhaps the most ancient psychological concept which has persisted to the present day with but slight modification from the original tenets promulgated in ancient times by Aristotle and Plato.[1/] Association in one form or another has been a popular issue with thinkers and philosophers. In his Phaedo, Plato recognized the association of ideas and demonstrated the effects of past experience on one's thoughts. Auguring the view of modern psychiatric practice, he considered dreams as the aftermath of subconscious impulsions and desires, and as the effects of "strong motions" persisting from the experiences of the previous day. Aristotle was the first to record specific categories by which idea association may be classified; he considered our momentary and perhaps fleeting association of ideas as resulting from their contiguity, similiarity, or contrast with, conceptions derived from former experiences or knowledge.[2/]

1/ Plato (c. 427 B.C.-347 B.C.) wrote his Phaedo about 383 B.C. Aristotle, pupil of Plato, was writing about 335 B.C. (author's note.

2/ Peterson, Joseph, Early Conceptions and Tests of Intelligence, World Book Company, Chicago, 1925, pp. 52-55.

Apparently the principles set forth by Aristotle were basically sound, for similar ideas appeared during the nineteenth century. They were generally accepted by the English Associationist School of psychologists which rose to preeminence with the works and philosophies advanced by Hartley, Hume, Mill, and Bain. Alexander Bain evolved four conditions under which the associational process may take place, retaining the three primary laws of Aristotle, and adding a fourth important concept which became a part of the associationist doctrine about 1855. Bain[1/] maintained that ideas will be associated and will follow each other in consciousness if the objects they represent: 1. have been perceived together (Law of Contiguity), or 2., have similar ideas (Law of Similarity), or 3., are associated, either through contiguity, similarity, or contrast, with more than one present object or impression (Law of Compound Association), or 4., are associated in the form of new combinations or aggregates, different from any that have been presented to it in the course of experience (Law of Constructive Imagination).[2/]

With this emphasis upon mechanical laws, associationists gradually endeavored to present a physiological hypothesis for the function of the associational process. Later, David Hartley, in his Observations, had evolved two fundamental theses

---

1/ Bain, Alexander, The Senses and the Intellect, J. W. Parker & Son, publisher, London, 1855.

2/ Ibid, pp. 318, 451-456, 545-552, 599-605.

in his theory of mind: 1. an attempt to trace a neural activity in terms of vibrations, and 2. an elaboration of all experiences according to the principles of association.[1/] Physiologically, "sensations" are caused by vibrations in the small particles of white medullary substances of the brain, spinal cord, and nerves, occasioned by external objects impressed upon the senses.[2/] However, the functions of neural activity were so little known in Hartley's time, that it is doubtful if his doctrine could be stated in modern physiological terms. As one reads of Hartley's "sensations," "vibrations," "particles," etc., at the same time realizing that physiological investigation was only slightly advanced in the eighteenth century, one receives the impression that Hartley is employing catch-words and phrases, of his own invention, to prove in his own mind a physiological basis for association; the reader feels that Hartley has little specific data to support his contentions.

But with the increasing popularity of physiological psychology during the nineteenth century, the attempt to find a physiological explanation for association received much attention. A physiological explanation of association by contiguity seemed plausible. William James asserted that the laws of habit in the nervous system have a physiological cause or basis. The idea is that if nerve-centers in the brain are excited

---

1/ Hartley, David, Observations on Man, J. Johnson, Publisher, London, 1791, Vol. 1, p. 6.

2/ Ibid, pp. 11-12.

simultaneously or in immediate succession, the same connection is established between them, to the extent, at least, that the resistance at their synapse (the point of contact) is reduced; the more frequently this simultaneous or successive activity of two neurones takes place, the more the passage between them tends to become a path of least resistance, so that if one of them is afterward excited, this excitation spreads to the other. James believed the formation of everyday habit to be a direct result of this lessening of resistance at the synapse.[1/]

With this highly behavioristic view of the associational process appeared the danger of a diagrammatic and mechanistic philosophy. Brett[2/] emphasized the repeated endeavors by later associationists to establish the physiological basis for association: "As we have noted from time to time, there have frequently been attempts to justify associationism by reference to the physiological processes supposed to sustain the psychological relations. The empirical trend of all associationism, though not necessarily physiological in its terms, does consistently make physiological explanation a desirable goal and at least a pious aspiration. Whenever the resistance is weakened, the temptation is strengthened . . . . But the vain groping after the required explanation, the disappointing snares of 'vibrations' and "brain paths' and other obvious metaphores, faded

1/ James, William, Habit, Henry Holt and Company, New York, 1890, pp. 9-32.

2/ Brett, G.S., "Association and Act Psychology," Psychologies of 1930, ed. Carl Murchison, Clarke University Press, Worcester, Mass., 1930.

into oblivion when the course of events put the conditioned reflex into the hands of the distracted seekers after truth . . . Discarding the unnecessary phrase 'of ideas,' and broadening both thought and language to suit the new outlook, it is correct to say that the use of conditioned reflexes represents the most significant way in which the central positions of associationism are active today.[1/] . . . . To speak plainly, the later history of association reveals a change of front which makes the older antagonism between content and act almost obsolete."[2/]

Relatively few long treatises have been published in recent years on the subject of association. During the nineteenth century, several books were written which dealt solely with the psychology of association, but later psychologists have considered association of less importance, and consequently decreasing stress has been placed upon association in the psychology literature of recent decades. Rather, investigations in the field of association have taken the form of experimental studies with their published data and conclusions.

The beginning of the twentieth century marks the decrease of the associationist literature. From 1850 until 1900, English, French, and German psychologists produced several works on association. During the period from 1889 to 1894, the German associationists, Wilhelm Wundt and Alfred Lehman, each

1/ Ibid, p. 45
2/ Ibid, p. 47.

wrote various short articles dealing with association. In France, Luigi Ferri wrote an historical and critical analysis of association, covering the period from Hobbes, 1665, to 1880; around 1900, articles[1/] on various aspects of association were contributed by Bourdon and Elié Halévy. The English associationists, James Sully, Alexander Bain, James Ward, David Hartley, G. Croom Robertson, and George R. T. Ross, were all writing wholly or almost entirely before the turn of the century. The last consideration of association on a significant scale in America was by William James in his works on psychology, pragmatism, and the formation of habits.

An historical examination of association indicates that early supporters of the psychology were inclined to attribute too much significance to the physiological explanation of association. There is an organic reaction which takes the form of an automatic response to an external stimulus; but in order to be infallible, the response must result from a conditioning process. Conditioning was first recognized by the Russian, Ivan Pavlov, about 1880. In his famous psychological experiments, Pavlov trained dogs to salivate at the ringing of a bell; this organic response was effected by presenting food to the animal in order to stimulate the salival glands, and at the

1/ Bourdon, B., Contribution à l'étude de l'individualité dans les associations verbales, in Wundt, Philosophische Studien, Band 19, Leipzig, 1902, pp. 49-62.

Halévy, Elié, De l'association des idées, in Congrès international de philosophie, Philosophie générale et metaphysique, Paris, 1900, pp. 219-235.

same time ringing a bell. After repeated applications of both the actual and the artificial stimulus, salivation resulted when only the bell was rung. Similar results were achieved with dilation of the pupil in the human eye and with other experiments. Conditioning is obviously a physiological activity. A certain response is introduced into the organic structure of the subject who subsequently reacts unconsciously to the conditioning stimulus.

The association of ideas resembles what might be called a mild form of conditioning. As in conditioning, the individual's response results from his previous training and experience, but the response is not always constant nor is it automatic or instinctive. The stimulus which produces association may be entirely new to the individual, whereas the conditioned response is induced only after repeated applications of the artificial stimulus.

III. THE PRESENT FUNCTION OF ASSOCIATION

A highly scientific and technical consideration of association and the mental processes serves the psychologist and the physiologist; but in the everyday classroom situation, we must make provision for a less theoretical and more functional method of teaching pupils to think. In modern society an out-of-school education is no longer sufficient for people of all strata of society. Although a boy may learn agrarian and mechanical skills by sharing in those occupations, he cannot

hope to become a member of a professional group solely by a process of participation in the group activities. If we are to conserve the experience of the past and initiate a beneficial progress in civilization, the functions of the schools are indispensable. Certain subject matter must be carefully selected and emphasized so that all pupils may achieve a direct sharing of the majority of the essentials of wholesome, purposeful living. One of the primary objectives of education is the teaching of fundamental skills: reading, writing and social and civil development. But educators must be careful that learning in school does not become an end in itself; the important element in learning is not the mere adding of new information, but rather the reconstruction or re-evaluation and use of what we knew before. Teaching must extend beyond the fundamentals and must serve to induce the pupils to think. Our experience grows by a process of interaction -- learning new activities and new uses for old truths. In order to teach the pupils how to think, the teacher must provide them with the tools of thinking, in the form of habits, in regard to beginning new assignments, in discerning the relative importance of items and the central idea of paragraphs, and in gathering and organizing material for evaluation in verbal or written language. "...., in so far as we develop this power of organizing knowledge, we are developing the power to think. Thinking is simply the capacity or ability, first, to get hold of a

suggestion, idea, or meaning, and then to examine whether it should be accepted. More briefly, thinking consists in finding and testing meanings. To think is to reorganize, to reinterpret, or reconstruct. Since this is the essential feature of learning, it follows that the cultivation of thinking is the core of the educative process."[1/]

The majority of present-day educators agree with the foregoing principles. "Perhaps teachers agree as readily to the aim of the improvement of pupil thinking as they do to anything of significance in educational thought and practice. A further step in the right direction is taken when the teacher goes beyond its acceptance to give it a central position in classroom instruction."[2/] In general, Kelley[3/] and Judd[4/] concur with the opinions expressed by Stillman, substituting the phrase: ".... to reason clearly, logically, and constructively,"[5/] for Stillman's "building up a certain kind of system or organization of fact,"[6/] when they describe the thinking process.

1/ Stillman, Bessie W., Training Children to Study, D. C. Heath Co., Boston, 1939, p. 10.

2/ Goodson, M. R., "Improvement of Pupil Thinking," Education Administration and Supervision, 25 (November, 1939) p. 615.

3/ Kelley, W. A., Educational Psychology, The Bruce Publishing Company, New York, 1933, pp. 132-138.

4/ Judd, C. H., Psychology of Secondary Education, Ginn and Company, New York, 1937, pp. 319-321.

5/ Kelley, op. cit., p. 136.

6/ Stillman, op. cit., p. 9.

Society has become an enormously complex machine. Children are subjected from infancy to the pressures of a constantly demanding environment, with limited sympathetic guidance along the way. Propaganda may plan an important part in molding life activities and in forming public opinion; it is frequently employed to sell other than mere commercial products. Propaganda may also be used to sell ideas -- sometimes harmful -- at times persuading people to subscribe to unjust laws, elect corrupt officials, accept and foster harmful institutions, or even precipitate nations into useless and deplorable warfare. This means that society and schools should endeavor to teach children just why people think as they do.[1/] One important purpose of the school is instruction and guidance for pupils in meeting and solving their everyday problems.

IV. OBJECTIVES OF THIS STUDY

One of the objectives of this study is to measure the extent and readiness of the associational processes at the secondary school level. Data on the associational abilities of high school pupils were procured by means of an objective test for the association of ideas in English composition. Instruction in thought processes and particularly association is extremely efficacious in the field of high school English. Glenn[2/]

1/ Miller, C. R., "Teaching Pupils How to Think," Nation's Schools, 21 (January, 1938), pp. 23-24.

2/ Glenn, T. H., "Clear Thinking Through English Teaching," California Journal of Secondary Education, 11, 1936, pp. 60-61.

suggests four ways in which English materials may be used in teaching clear thinking; each of these methods has inherent elements of the associative process. The first of these is constant exercises in semantics, the meaning of words, which gives the student not only a greater reading and speaking efficiency, but also a clearer and more accurate faculty for thinking and putting his ideas into action. The second method is emphasis and drill upon accuracy and clearness in grammatical constructions and punctuation to improve and teach the thought processes.

The study of literature stimulates clearer thinking on the part of students. By reading the great works which earlier thinkers and socially-conscious persons have produced, the pupil learns to place true values upon human experience and achievement and to associate these values with the events of his own life. Finally, making outlines, both in creative work and in reading assignments for more complete comprehension, is conducive to clearer thinking. There must be logical reasoning and method in planning an outline for a theme or other written work; if the student outlines his reading, his associative powers are improved by his noting the chronology, logical arrangement, and proportion of events.[1/]

The field of English composition, then, lends itself effectively to the investigation of the associational processes. This study will consider the implications of association in the

---

1/ Ibid, pp. 60-61.

field of English and more especially in English composition at the high school level. Some of the general objectives to be attained in this investigation are:

1. To construct an objective test for measuring the extent and readiness of the association abilities of high school pupils.

2. To ascertain the importance of association in the thought processes of high school pupils.

3. To determine the feasibility of strengthening pupils' association abilities through a planned teaching method.

4. To consider possible curriculum - content for a teaching program for association abilities.

Specific objectives:

1. To administer the Test for the Assocation of Ideas in English Composition to at least 200 pupils of high school age.

2. To correlate achievement in association with: intelligence, reading ability, general English grade, and English composition grade.

3. To investigate what further might be done to measure associational abilities.

4. To evaluate activities which might be carried out under a teaching method directed toward improving associational abilities.

5. To consider topics for further study in the investigation of associational abilities.

CHAPTER II

RESEARCH IN THE AREA

CHAPTER II

RESEARCH IN THE AREA

As has been stated in the introduction, more recent studies have examined the psychological and psychiatric aspects of association. Investigations have been undertaken to correlate association with delinquency, psychoneuroticism, personality, attitudes, and sex differences. Efforts frequently were made to establish association as a predictive factor in the above tendencies. Studies of importance in education have also been completed which attempted to relate association proficiency with reading rate, mental age of adults, measure of vocabulary knowledge, and intelligence. Although findings of many of the individual studies were not generally conclusive nor very encouraging, the majority of investigators are of the opinion that with increased refinement of association tests and techniques, association will assume a greater importance in psychological and psychiatric investigation, and also in education.

I. THE FORMATION OF ASSOCIATIONS

The common assumption held by people giving association tests is that the stimulus word makes a person think of the thing or quality or fact that it names, and that this thing or quality or fact calls up something else, the word for which the

subject then writes as his spontaneous response to the stimulus word. On the contrary, "About ninety-five percent of responses are due to connections formed with the stimulus words in hearing and reading, and in speaking and writing. They reveal chiefly what the individual has heard, read, said, and written, weighted by his interests therein, and what connections have operated to give meaning to words heard and seen."[1/] The response is frequently a word which has been connected to the stimulus word in the context of our earlier experience. Therefore, the great majority of responses in an association test are not largely indicative of the attitudes and interests of an individual; but the value of the test lies in the fact that most of the connections operate easily as a result of earlier meaning and practice, and therefore the subject may be less wary about reacting diagrammatically in the few cases where his interests and attitudes do determine his responses.[2/] The completion type of association test may be more indicative of the interest and attitudes of the individual because he may then be less influenced by psychological tension inherent in the automatic response.

1/ Thorndike, E. L., "Significance of Responses in the Free Association Test," Journal of Applied Psychology, 16, 1932, pp. 247-253.

2/ Ibid, p. 249.

II. EARLY ASSOCIATION TESTS

Kent and Rosanoff[1/] constructed the earliest significant association test. The instrument consists of a group of one hundred words in common usage, in which are included abstract and concrete nouns, personality characteristics, verbs, adverbs, adjectives, personages, etc. In taking the test, the subject is instructed to respond orally with the first single word which he thinks of when the examiner pronounces the stimulus word; the examiner then records the response in the space provided on the test form opposite the stimulus word. The Kent-Rosanoff association Test is intended for use primarily by examiners who are familiar with the subjects tested, in order to detect "pathogenic subconscious ideas or complexes" to which the subjects may be susceptible.

In order to facilitate scoring of the association test, Kent and Rosanoff compiled Frequency Tables which listed "normal" responses, with the frequency of each response, for each stimulus word appearing in the association test. To further clarify scoring and interpretation of responses, the authors gave definitions of types of words which were considered acceptable as "normal" responses. The latter provision was necessary because of the great variety of responses which might be made by normal individuals due to the recency, intensity,

---

1/ Kent, G. H., and Rosanoff, A. J., Free Association Test, Manual of Psychiatry reprint, pp. 546-620, sixth edition, John Wiley & Sons, New York, 1927.

and contiguity of the individual's personal experience. The Kent-Rosanoff Association Test is still in wide use despite later studies which have taken exception to the word list used in the test; it has been demonstrated that the stimulus words used by Kent and Rosanoff are not the most frequent in English usage, but it is perhaps true that the words used are significant from a psychological standpoint.

The Woodrow-Lowell association tables for children[1/] closely resemble the Kent-Rosanoff test. One hundred selected words, ninety of which corresponded to those of the Kent-Rosanoff test, were used, together with ten others which replaced the ten more difficult words of the Kent-Rosanoff study. Both of these tables may be of doubtful usefulness because they contain many stimulus words which are not universally known and used by English-speaking people.[2/]

Thorndike[3/] gives a word list that offers a foundation for a better list for use in free-association experimentation. He supervised the tabulation and counting of some 4,565,000 words in written English of various sorts; the selection of material surveyed included literature for children, the Bible

---

1/ Woodrow, R. S., and Lowell, F., "Children's Association Frequency Tables," Psychological Monographs, v. 22, No. 5, 1916.

2/ Wheat, Leonard B., Free Associations to Common Words, Columbia University Contributions to Education, Teachers College Series, V. 498, Bureau of Publications, Teachers College, Columbia University, New York, 1931, pp. 4-5.

3/ Thorndike, E. L., The Teachers' Word Book, Bureau of Publications, Teachers College, Columbia University, New York, 1921.

and English classics, books about cooking, sewing, farming, the trades, daily newspapers, and correspondence. From this word count was derived a list of the 10,000 words most frequently employed. Horn[1/] verified Thorndike's list by a word count of over 5,000,000 running words, and estimated that the words and their repetitions comprise between 75 and 80 percent of English language usage, Of the words used in the Kent-Rosanoff Association Test, forty-one are in the first 500 most common words listed by Thorndike, twenty-two in the second 500 of Thorndike; eighteen are in the second 1000; ten are in the third 1000; six are in the fourth 1000; two are in the fifth 1000; and one, "whiskey," is not in the first 10,000 words listed by Thorndike.

Thus, from an examination of later amplification of the association technique early developed by Kentand Rosanoff, it would seem that they had not selected the words most commonly used by English-speaking people. It may be logical to assume that responses to more well-known words would be more uniform, and norms set up according to such a list would be more valid and the data obtained of greater significance in separating pathological from normal responses. However, the Kent-Rosanoff Test is still a very popular instrument for measuring associative tendencies; it is probable that the quantitative aspect has been sacrificed for the psychological quality of the words

---

1/ Horn, E., A Basic Writing Vocabulary, University of Iowa, Monographs in Education, First Series, No. 4, April, 1926.

retained in the list.

III. ASSOCIATION AND PERSONAL TRAITS

Several studies have been made to determine the value of association as an indicator of personal traits and attitudes. Lorge and Thorndike[1/] used the response method to obtain data on association as a predictive factor for personal traits. A group of adults was given a completion test consisting of 240 items designed to discover individual interests toward things, people, animals, art, music, beauty, responsibility, etc. Correlations were low; an average between the correlations in the case of music, an outwardly apparent interest, and combined pleasure and discomfort, a comparatively indiscernible interest, gave a correlation of about +.3 to +.4, prompting the investigators to hold little hope for the completion technique as a prognostic of personal traits. A later study by the same authors[2/] made use of an association test, which was prepared by Dr. Truman Kelley, as a means of measuring the interests and attitudes of a group of mature persons. Correlations of test scores with indicated actual interests were for the most part near zero, with none exceeding +.4. "Better keys and multiple scoring would doubtless cause improvement in these

---

1/ Lorge, I., and Thorndike, E. L., "The Value of the Responses in a Completion Test as Indications of Personal Traits," Journal of Applied Psychology, 25, 1941, pp. 191-199.

2/ Lorge, I., and Thorndike, "The Value of the Responses in a Free Association Test as Indicators of Personal Traits," Journal of Applied Psychology, 25, 1941, pp. 200-201.

results, but there is little or no possibility that even an 800-word test would give reliabilities of +.5 or better."[1/]

Kelley and Krey[2/] performed a comprehensive investigation into the prognostic value of the association test in regard to eight social attitudes or character traits generally regarded as desirable: courtesy, fair play, honesty, loyalty, mastery, poise, property rights, and school drive. The study dealt with children of approximately seventh grade maturity; but according to the author, the test used was appropriate for mature persons.[3/] Pupils taking the association test were rated for each trait by teachers and in anonymous reports by fellow students. For each trait, responses of the high group were positively credited, and those typical of the low group negatively

---

1/ Ibid, p. 200.

2/ Kelley, Truman L., and Krey, A. C., Tests and Measurements in the Social Sciences, Charles Scribner's Sons, New York, 1934.

3/ Lorge and Thorndike record a note of dissension concerning this point: "We venture to suggest that the superiority of the results obtained by Kelley in the case of school children to ours may be due to the fact that the children often wrote the names of things, acts, etc., which they thought were fit and proper associates of the stimulus words rather than the first words that came to mind or took the task to be one of finding suitable ideas rather than of thinking quickly of any word." --p. 201-- Lorge, I., and Thorndike, E. L., "The Value of the Responses in a Free Association Test as Indicators of Personal Traits," Journal of Applied Psychology, 25, 1941, pp. 200-201.

credited in constructing a scoring method. Scoring keys were later tested on a research group yielding coefficients of reliability from .46 on "courtesy," to .74 on "regard for property rights," and correlations with teacher and pupil ratings from .02 on "mastery," to .28 on "honesty;" another group yielded coefficients of reliability ranging from .00 in "mastery" to .57 in "honesty" and in "school drive," with correlations with pupil and teacher ratings ranging from —.10 in "loyalty" to .18 in "courtesy". "These results were distinctly discouraging although numerous points had come to light in which definite improvements in procedures and techniques could easily be made."[1/] Although the investigation was unpromising in itself, Kelley and Krey were led to conclude: "The association test shows promise as a means of measuring character traits, but as thus far perfected, is entirely insufficinet for satisfactory individual measurement."[2/]

Wyatt[3/] summarized the sex differences in "interests" which association exercises disclosed. Two parallel free association tests of 110 stimulus words each were given to more than 1000 subjects ranging from the seventh grade level to people in college and business. Responses of the different

---

1/ Kelley, op. cit., p. 402

2/ Ibid, p. 435.

3/ Wyatt, H. G., "Free Word Association and Sex Difference," American Journal of Psychology, 44, 1932, pp. 454-472.

sexes were closely analyzed and the sex differences noted in the association trends recorded. In the following table, the letters "M," "MM," "F," and "FF," signify distinctive, and markedly distinctive male or female tendencies; "N" signifies no distinctive sex tendency.

Table II[1/]

Summarizing Sex Preferences of the Eight Groups for Different Classes of Associate Words

	FF	F	MM	M	N
(1) Body Parts	1	4	0	2	1
(2) Dress	1	1	0	1	5
(3) Personal adornment	1	0	0	0	7
(4) Persons or people	0	1	0	4	3
(a) females	0	0	1	3	0
(b) males	0	1	0	2	3
(5) Aesthetic	1	4	0	0	3
(6) Color	3	2	0	0	3
(7) Activity and Adventure	0	0	2	4	2
(8) Outdoor	0	0	0	7	1
(9) Social	0	0	0	0	8
(10) Religious	0	0	0	0	8
(11) Emotional	2	1	0	1	4
(12) Economic	0	0	0	2	6
(13) Foods	0	1	2	2	3

1/ Ibid, table adopted, p. 458.

Wyatt concluded from an inclusive and detailed analysis of data that there is probably a distinctive difference in responses, according to sex, in a free association test, but the association test must be designed to bring out the difference. "However, it appears that (1) as the sex differences disclosed depend upon the class of stimulus word, some may easily escape representation (e.g., associates in terms of social or physical sciences, mechanical, manual occupations escaped the exercise under examination); and (2) the sexes agree far more than they differ in their responses. In fine a wider range of stimulus-words with a shortened analysis, confined to the most sex-contrasting responses, is more formative than a full analysis with a narrower range, and is the more generally practicable."[1/]

IV. ASSOCIATION AND A-SOCIAL TENDENCIES

Fauquier[2/] made a study of the association responses of boys institutionalized for delinquency, and a random selection of normal boys from the same geographical area. Responses of both groups were obtained for the stimulus words: hate, fear, love, and desire. The general findings of the study suggest basic differences between the attitudes of institutionalized

---

1/ Ibid, p. 472.

2/ Fauquier, William, "The Measurement of Attitudes of Delinquent and Normal Boys by Use of an Associational Techniques," Child Development, 10, 1939, pp. 231-239.

boys and those of normal individuals. In nearly every instance, the responses of the normal group indicated a greater emotional maturity and socialization with less evidence of abnormal fears and conflict. In addition, there was evidence of a notable dissimilarity among "delinquent" boys maladjusted in the institution, and those well-adjusted, which should be investigated to ascertain the relation between environmental factors, specific institutional behavior, and attitudinal patterns.

Tendler[1/] attempted to apply the free association technique during a study of a group of psychoneurotic adults, in order to determine the association tendencies characteristic of psychoneurotic individuals. From his investigation the author concludes: "A possible hypothesis is that under the general classification of psychoneurosis there are included two differing groups. One is characterized by a constitutional inadequacy of associative behavior. This group may be thought of as the true psychoneurotic .... The other group showing no associative pathology .... At any rate, the present study offers a suggestive approach for differentiating the psychotic from the psychoneurotic, for differentiation within the psychoneurotic group, and the possibility for tracing the relation of associative tendencies to symptomatology, responsiveness to treatment, and variations in treatment techniques."[2/]

1/ Tendler, A. D., "Associative Tendencies in Psychoneurotics," Psychological Clinic, 1933, Vol. XXII, No. 2, pp. 108-116.

2/ Ibid, p. 116.

V. ASSOCIATION AND INTELLIGENCE

In a study conducted at Sing Sing Prison, Hargan[1/] studied the relation between prisoners' rates of association and mental ages. The subjects were told to state, as quickly as possible, the first one hundred words they could think of. "The correlation between the number of words and Sing Sing mental age (measured by various group and individual tests as the case demands) is found to be:

Negro, all cases	$r = .58 \pm .05$	71 cases
White Native-born white applicants for parole	$r = .52 \pm .06$	71 cases
Native-born white admissions	$r = .54 \pm .04$	169 cases"[2/]

The author constructed the Hargan Scale of norms for prediction of mental age of adults, according to proficiency of the individual's word listing, so he believes association proficiency to be an indication of intelligence, a contention which is supported by his fairly significant correlations. Hargan also considers the test useful in connection with other tests in showing tendencies to introversion-extroversion.

As a corollary to his investigation in free association,

1/ Hargan, James, "The Relation of Continuous Association Scores to Mental Age of Adults," The Psychological Clinic, Vol. XXI, No. 1, March-May, 1932, pp. 55-58.

2/ Ibid, p. 56.

Wheat[1/] studied the relationship between intelligence and free association. He correlated their intelligence scores with the scores achieved by 216 eleven-year-old children on the association test used by Dr. Wheat (consisting of twenty-five words picked at random from the five hundred most commonly used words in the English language) in his investigation regarding children's free associations to common words. The I.Q. scores were obtained from standardized intelligence tests; therefore the I.Q.'s were considered reliable. Each child had been given four scores for the test in free association, as follows: (a) a mark which indicated the number of common responses given to the list of twenty-five words of the writer's association test; (b) a mark which indicated the number of failures of response; (c) a mark which showed the total score when each common response was given a number weighting corresponding with its frequency of appearance in the records of the entire 1,323 children; and (d) a mark which showed the total score of weighted common responses plus weighted failures of responses. Correlations between these four measures and intelligence were then compiled as follows:

rI.Q.--(a) = .17, P.E. ± .04

rI.Q.--(b) = -.20, P.E. ± .04

1/ Wheat, Leonard B., Free Associations to Common Words, Columbia University Contributions to Education, Teachers College Series, V. 498, Bureau of Publications, Teachers College, Columbia University, New York, 1931.

rI.Q.--(c) = .16, P.E. ± .04

rI.Q.--(d) = .04, P.E. ± .05 [1]

Interpreting the above data, it would seem that there is a low positive correlation between associative ability and intelligence of children. In three of the four correlations, ranging from .16 to .20, the correlations are slightly significant. (The negative .20 may be disregarded since the correlation is between high I.Q. and high number of failures to respond to a stimulus word; the negative correlation is therefore natural.) The low correlation, .04 for (d), might be anticipated, for the correlation is quite involved, and many variables must be considered.

VI. ASSOCIATION AND READING ABILITY

The relationship between rate of reading and speed of association may have some significance in teaching reading and therefore may be helpful in remedial reading. This was the approach considered by Traxler[2] in his investigation. Both free-association and controlled-association tests were used; tests were given to 160 junior high school pupils. The responses *per se* were considered of little significance in regard to rate or speed of association, and accordingly were not

---

1/ Ibid, pp. 30-31.

2/ Traxler, Arthur E., "The Relation between Rate of Reading and Speed of Association," *Journal of Educational Psychology*, 25, 1934, pp. 357-365.

listed. All correlations between the association tests and the rate of reading tests were found to be significant, ranging from +.32 to +.65. Additional correlations indicated that speed of association has a definite relationship to rate of reading that is independent of other aspects of mental ability as measured by standardized intelligence tests. Other correlations demonstrated a significant relationship between rate of reading and association time where vocabulary is held constant. The author believes that: "There is ground for thinking that slow association rate may be so closely related to the retarded reading rate of some slow readers that the teacher should not utilize the usual methods to get them to read more rapidly."[1/] If the preceding statement is completely defensible, it means that association tests should have a wide use in determining which pupils are prone to future retardation in reading and which pupils warrant remedial instruction.

VII. SUMMARY OF CHAPTER TWO

From the research studies cited heretofore, it is evident that the more recent trends in investigations into the psycho-

---

1/ Ibid, p. 365.

logical and educational possibilities of association have taken the form of studies examining the prognostic values of association as an indicator of psychological traits. However, there have been a few studies relating association to educational prognosis. Most authors of studies of the educational aspects of association are of the opinion that with increased investigation and refinement of association tests, the latent potentialities of association in education may be developed.

The value of association tests for clinical work in the field of psychology and psychiatry becomes apparent from a study of the research in that area. Free association tests are particularly effective, for it is possible to tabulate normal and psychopathic responses for a large number of word stimuli. The trained psychologist is able to obtain a good appraisal of the subject's mental age and personality traits during a very short testing period, which would be impossible without such clinical instruments.

In the field of education, however, where time and resources are more limited, the association test becomes more unwieldy and difficult of interpretation. Free association word tests in the clinical situation are largely individually administered, a prohibitive recourse in the broad educational field. An examination of the testing instruments in association indicates that there are no tests which might be compared with standardized objective group tests found in other areas.

The general conclusion seems to be that association is not sufficiently important in education to warrant the construction of group tests for association. Association tests as thus far developed are practicable only in certain specific educational fields, possibly with reading readiness testing, and in use with the education of juvenile delinquents, and in the guidance field to determine interests, aptitudes, and attitudes.

CHAPTER III

THE TESTING PROGRAM

CHAPTER III

THE TESTING PROGRAM

I. THE TEST FOR THE ASSOCIATION OF IDEAS

The purpose of the study was to determine the extent and readiness of the associational processes at the secondary school level, and to correlate associational proficiency with certain pupil abilities and characteristics in the field of English composition. An investigation of recent educational studies in association indicated that there was no existing test which suited the conditions of this testing situation, and accordingly the author undertook the construction of a serviceable instrument. To secure sufficient significant data regarding the associational abilities of pupils at the high school level, an objective test for the association of ideas in English composition was given to more than two hundred pupils of the nineth, tenth, eleventh, and twelfth grades during the spring of 1947. The desired elements of the test were: (1) a comprehensive measuring of the extent and readiness of association abilities; (2) adequate length and objectivity of the test in order to insure reliability and validity of the instrument, and (3) a simplified, effective scoring

method. The investigation of the associational processes will include some consideration of the efficacy of strengthening pupils' associational abilities by means of a planned teaching program.

The test was entitled the "Test for the Association of Ideas in English Composition." The theme titles were selected which were generally familiar to all pupils taking the test, so that they could draw from their previous experience and knowledge to associate ideas which might be developed as topics under the given theme titles; careful selection of theme titles also assured uniform difficulty for all pupils in regard to the subject-matter of the test. The ten theme titles chosen were: (1) "Present-day Slang," (2) "Day-dreams," (3) "The Daily Trip to School," (4) "Walking as a Pastime," (5) "When I Grow Up," (6) "The Use of the Dictionary," (7) "My Favorite Sport," (8) "The Story of My Life," (9) "The Movies," (10) "My Favorite Hobby". For the first six titles, space was provided for six responses under each title; under the last four titles, there was space for the pupils to list eight topics under each title. In the test thus set up there were sixty-eight associative responses possible under ten diversified titles, providing a comprehensive measure of association ability.

An effort was made to assure validity of the test items contained in the test. Several English composition text-books

were examined,[1/] and the opinions of educators in the field of English were solicited in order to validate the theme subjects selected for the association test.

The test, consisting of 68 response items, appeared to be of adequate length for a reliable measuring of the associational abilities, and the theme titles were sufficiently varied for well-rounded response. Time devoted to the test proper was 25 minutes, adequate for the majority of pupils to finish, so that the test was not a speed test, and average pupils were not penalized in that respect; if the time factor affected some scores, this was satisfactory because the test was also intended to be a measure of readiness of association.

II. SCORING OF THE TEST

At the outset of the investigation, a simplified, effective scoring method was sought for the test; objectivity was one of the prime factors to be desired. There were 68 possible responses on the test, and a tentative scoring plan gave

---

1/ Among the sources consulted for validation of theme subjects were: "Tanner, W. M., Composition and Rhetoric, Ginn and Company, New York, 1922; Jones, E. S., Practical English Composition, Century Company, New York, 1931; Tressler, J. C., English in Action, Book One, D. C. Heath Company, New York, 1921; Tressler, J. C. English in Action, Course Two, D. C. Heath Company, New York, 1940.

two points for each acceptable response[1/] and one point for every other response. After a pre-test was given, however, it was discovered that, due to the nature of the test and the largely abstract material offered as responses to many of the test items, much subjectivity would enter into the scoring; for complete objectivity, the test would have to undergo almost complete revision, impossible at the time of the study. Accordingly, the author undertook the entire scoring of all tests, in this way eleminating different interpretation of test responses by more than one scorer. The instrument in the specific testing situation described served as a valid test, but it is necessary to conclude that this test, in its present unrefined form, would have a very limited value in a future similar testing situation.

As additional results were compiled, certain decisions had to be made in regard to scoring questionable responses. Among the problems which arose were: (1) What to do if the pupil had thought in sub-topics, some of which were not directly related to the title; (2) What to do if ideas were simple listings or categories of the title, frequently found under the

---

1/ An acceptable response was defined as an idea which was outwardly recognizable as definitely related to the theme title; one point was given for unrelated responses because it was decided that any response was an indication of association taking place. One point was given for the repetition of an idea under the same title. These scoring standards were completely revised after the pre-test was given.

titles on favorite slang, sport, and hobby; (3) What to do if a train of ideas under the title was discernable, but which was not precisely related, for example, under "My Favorite Slang:" "Mexican, Chinese, Spanish, French, etc."

In most cases, sub-topics were given credit if they were properly inter-related. It was decided that listing related topics under the theme title, "My Favorite Slang," and occupations under the title, "When I Grow Up," were to receive credit, while listings under "My Favorite Sport," and "My Favorite Hobby," were to receive no credit, since the latter two titles denoted a singular subject for discussion. In many isolated cases, individual decisions had to be made in regard to credit. At this point it became evident that partial credit for repetitions and unrelated ideas tended to invalidate the objectives of the test, so credit was restricted to responses which were outwardly recognizable as very definitely related to the theme title.

III. ADMINISTRATION OF THE TEST

The test consisted of three mimeographed sheets, the first containing the directions to the pupil; the second, the first six test items; and the third, the last four items of the test proper. Four practice test items were included on the first page which the pupils were to use for practice and discussion with the examiner before the actual test began, so that all

pupils would have a clear knowledge of the test situation before the actual test began. Instructions to the examiner for administering the test were typewritten and given to each examiner beforehand so that uniformity of test administration was assured. The instructions to the examiner were as follows:

Instructions to the Examiner for Administering

the Test for the Association of Ideas in English Composition

Step one: Be sure that each pupil has a sharp pencil, and that the examiner has a supply of extra pencils on hand. Explain that if a pencil breaks, the pupil may obtain another by raising his hand.

Step two: Pass out tests, making sure that each pupil has one and only one test. Explain that the pupil should not look at the test pages until permission is given. (If the examiner prefers, the test sheets may be retained until directions have been given and the pupils are ready to begin the test.) Have the pupils fill in the information as far as the "Directions to the Pupils".

Step three: Say: "This is a test of your ability to think up ideas for themes. During the test I cannot answer questions, so be sure you understand the directions after I give them. Read to yourself the 'Directions to the Pupils,' as given on the test, as I read them aloud."

Step four: Read aloud the "Directions to the Pupils," and ask if there are any questions. Impress upon the pupils the fact that they should not waste time thinking, but that they must go on to the next subject if they cannot think of a suitable response.

Step five: Explain the probable derivation of the points listed under "Life of Abraham Lincoln," as phases of his life. The phases of development---origin, past, present, and future---are common to most subjects. (Other possible points listed under Lincoln might be: parents, education, early hardships, "honest Abe," character, personality, early occupations, the law and politics, public debates with Douglas, the slavery question, amnesty of slaves, re-election, assassination, later honors

accorded the statesman---Lincoln Highway, Lincoln Memorial, Lincoln Memorial University; others).

Step six: After discussing the subjects under "Life of Abraham Lincoln," tell the pupils to fill in topics under "The Big Game." After a majority have finished, tell the pupils to stop and then begin to ask individuals to state one of their topics, the examiner commenting "good," or "fair," upon each response, or explaining why a response would not be suitable---not outwardly recognizable as related to the subject in any way. After approximately half the pupils have responded, ask the class if they have listed any topics about which they are in doubt; if so, explain the degree of acceptability of each doubtful response volunteered. (Some topics which might be advanced under "The Big Game" are: preparation, special plays, condition of our players, possibilities of a win, championship at stake, the coach, team rivalries, place game will take place, cheering section, weather for the game, transportation to the game, the crowd, star plays of the game, star players, the winning score, after-game celebration, snake-dance, victory bells, victory dance, after-effects; any topic from the players' standpoint; others.)

Step seven: Ask if there are any questions and if the pupils feel that they need additional practice. If they do, continue under the subject "Automobiles" in much the same manner as described in step six. (Topics under "Automobiles" might be: definition, early inventors, early autos, horseless carriage, types of cars, pleasure vehicles, freight trucks, automobile clubs, present-day highways, buying an automobile, operation of an auto, driving an auto, auto-manufacturing cities, the future of automobiles and the automobile industry; others.)

Step eight: If the pupils still need additional practice, develop the topic, "A Vaction Trip," as in step six. (Topics under "A Vaction Trip" are: preparation, transportation, equipment, companions, route, duration, scenes along the way, activities, diversions, mishaps, historic scenes, cost, time of year, benefits derived; others.)

Step nine: Ask if there are any questions. After all questions have been answered, inform the pupils that twenty-five minutes will be permitted for the test. Explain that a mistake has been made in the mimeographing, and that the pupils are to substitute the topic "Present-day Slang" in place of the first test item, "My Favorite Sport." Tell the pupils to begin the test on pages one and two; start timing the test. Twenty-five minutes will be allowed for taking the actual test; at the end of twenty-five minutes, tell the pupils to stop. Collect the tests.

The Test for the Association of Ideas in
English Composition

Pupil's name.....Age....Sex..M..F..

School.....Grade.....

Directions to the Pupil

In this test you are to list ideas which you might include in a theme on each given title. An idea which has anything at all to do with the theme title will be all right to put down. Do not think long on each subject. If you cannot think of an idea, go right ahead to the next title. If you have time after going through the entire list, come back and work on those that you have skipped. It is better to put down any idea you think of rather than leave a space blank.

Examples

1.
Life of Abraham Lincoln

1. His birth
2. Childhood
3. The presidency
4. The Civil War
5. Reconstruction period
6. His death

2.
The Big Game

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

3.
A Vacation Trip

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

4.
Automobiles

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

Test: Page one

1.

My Favorite Slang

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

2.

Day-dreams

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

3.

Walking as a Pastime

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

4.

The Daily Trip to School

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

5.

When I Grow Up

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

6.

The Use of the Dictionary

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

Pupil's name.....Age....Sex..M..F..

School.....Grade.....

Major Department. (as Junior Commercial, Senior College, etc.)

.....

Test: Page two

7.

My Favorite Sport

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....

8.

The Story of My Life

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....

9.

The Movies

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....

10.

My Favorite Hobby

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....

Pupil's name.....Age....Sex.....F..

School.....Grade.....

Major Department.(as: Junior Commercial, Senior College, etc.)

.....

IV. EVALUTATION OF THE TEST DATA

The test was administered to approximately 170 pupils among the four grades of the Wakefield, Massachusetts, High School, and to 45 pupils of the Manchester, New Hampshire, Central High School. Uniform testing conditions were maintained throughout the testing program. Good data were available for intelligence quotients, English marks for written composition and general English average, and reading comprehension, so that various correlations could be made. Correlations were made between: (1) English written composition marks and general English marks, (2) General English marks and Association Test scores, (3) English written composition marks and Association Test scores, (4) Reading comprehension and Association Test scores, and (5) Intelligence and Association Test scores.

As anticipated, there was a fairly high correlation between English written composition marks and general English marks, but the correlation was not as high as one might logically expect. The correlation obtained for the English marks of 209 pupils was +.67, which indicates a fairly high relationship between the two factors and gives a sound basis for other comparisons. For the same 209 pupils, correlations computed between general English marks and Association Test scores and between English written composition marks and Association Test scores were, respectively, +.22 and +.14. These two correlations, although slightly significant, indicate that proficiency

in associative ability is not dependent upon good achievement in English, and that poor English work would not necessarily result in poor achievement in associative ability and possibly other thought processes. This conclusion has significance in the consideration of possible curriculum content for instruction for improvement of the associative ability.

Reading comprehension scores, based on New England norm percentiles, were obtained for 91 pupils of the Wakefield High School. The correlation between reading comprehension and Association Test scores was +.068, indicating a negligible positive relationship between the two abilities. The low correlation obtained here is important, for it offers statistical evidence against the logical assumption, from a purely philosophical consideration, of a high correlation between the two abilities. Traxler,[1/] as noted earlier, found significant correlations between association and reading rate, ranging from +.32 to +.65. A high correlation between reading rate and reading comprehension has been established, so the results observed in the study performed at Wakefield are by no means conclusive; but it is probable that poor reading comprehension does not have a corresponding effect upon association ability, and it is therefore probable that good progress could be made

---

1/ Traxler, Arthur E., "The Relation between Rate of Reading and Speed of Association," Journal of Educational Psychology, 25, 1934, pp. 357-365.

in teaching association ability to pupils of less able reading comprehension.

Intelligence and association were the next factors considered for correlation. Intelligence quotients obtained by standardized intelligence tests were available for 118 pupils, and the correlation was made with scores on the Association Test. The correlation between intelligence and scores achieved on the Association Test was found to be +.36. This correlation indicated a slight relationship between intelligence and association. This correlation was much higher than that obtained by Wheat[1/] in his investigation of free association; his correlations ranged from +.04 to +.20, average +.143. On the other hand, Hargan,[2/] investigating association and mental age in Sing Sing Prison, noted an average correlation of +.55 between word association and mental age; this was a comprehensive study dealing with 311 cases, of which 71 were negroes. The above studies indicate that there is a definite correlation between intelligence and association, and this factor would affect in some measure a teaching program set up to improve

---

1/ Wheat, Leonard B., Free Associations to Common Words, Columbia University Contributions to Education, Teachers College Series, Vol. 498, Bureau of Publications, Teachers College, Columbia University, New York City, 1931.

2/ Hargan, James, "The Relation of Continuous Association Scores to Mental Age of Adults," The Psychological Clinic, Vol. XXI, No. 1, March-May, 1932, pp. 55-58.

association ability. However, education at the high school level is sufficiently selective so that the great majority of pupils are of average or better intelligence, and it is likely that most pupils would profit from a course designed to promote a facility and enrichment of associating ideas.

CHAPTER IV

SUMMARY AND CONCLUSIONS

CHAPTER IV

SUMMARY AND CONCLUSIONS

I. SUMMARY

The purpose of this investigation was to discover the extent and readiness of association of high school pupils, through the medium of listing topics to be developed under specified titles of English themes. In so doing, additional data were obtained in regard to association ability related respectively to intelligence, English grades in school, and English composition grades in school. With these relationships ascertained, some conclusions could be drawn in regard to the practicability of teaching association as a corollary to the English curriculum.

In order to obtain some objective data on association ability for correlation with other criteria, an original test which provided a measure of the ability of pupils for associating theme topics under various theme titles, was constructed and administered. It was found after testing that scoring would, to a considerable degree, be affected by subjectivity, but the test as employed in the specific situation proved adequate for the purposes of this study.

The test was administered to about 215 pupils of high

school grades in two school systems, in Wakefield, Massachusetts, and in Manchester, New Hampshire. The group tested was representative of a wide range of intelligence and socio-economic background; teaching methods in the two school systems were comparable.

The following factual information was noted:

1. A low positive correlation was found between general English grades and the association of ideas in English composition ($r = +.22$).

2. A low positive correlation was found between English composition grades and the association of ideas in English composition ($r = +.14$).

3. The correlation between reading comprehension and the association of ideas in English composition was negligible ($r = +.068$).

4. There is a moderate correlation between intelligence and the association of ideas in English composition ($r = +.36$).

5. There was a fairly high correlation between English written composition marks and general English marks ($r = +.67$).

The above correlations indicate that association ability and achievement in English are not inter-dependent, and that association is only slightly dependent upon intelligence. From this we may conclude that association may be taught to the great majority of pupils, that the field of English is good for that purpose, and that improvement in association may be possible for pupils of all levels of English achievement.

II. SUGGESTIONS FOR TEACHING ASSOCIATION

The actual curriculum for instruction of association may be greatly varied and interesting to pupils. Among the activities which may be combined to provide an enriched and appealing curriculum for teaching association to high school pupils are the following: (1) Discussion and assignment of research on various aspects of association and other thought processes, such as: memory, inductive and deductive reasoning, and mnemonics. (2) The case study method as developed for guidance, and which is easily adaptable for the stimulation of ideas and reasoning power. (3) Extemporaneous talks and extemporaneous assignment of topics for theme titles and outlining under theme topics. (4) Descriptive writing on suggested topics from magazine and newspaper articles and pictures. (5) Reports on historical events, with suggested and logical solutions developed. (6) Class presentation of topics for class development and outlining. (7) Writing, interpreting, and development of generalized

statements. (8) Discussion of certain elements which are common to virtually all subjects, such as: origin, past, present, and future. (9) Class reading of stories with activities suggested by pupils to illustrate story; and (10) Writing and suggesting topics which may be developed in describing objects brought into the classroom. This is a generalized list of activities which may be introduced into the English course of study; limited additional planning would produce specific activities for daily assignment. Opportunities undoubtedly are present in other subject-matter areas which would effect a similar improvement of association abilities.

Of the above activities, those dealing with the thought processes -- memory, inductive and deductive reasoning, and mnemonics -- may admit of a more detailed description. It is perhaps essential that the pupils understand something of the objectives and methods of learning and thinking before they will enter enthusiastically into a modified program directed

toward the improvement of thinking. A very superficial treatment of memory would include the four parts of the memory process -- learning, retention, recall or revival, and recognition -- and how they differ. The distinction should be noted between rote and logical memory; the laws of learning could be briefly discussed.[1/]

Closely related to the study of memory is the discussion of mnemonics. Mnemonics are artificial devices for memorizing, depending upon arbitrary associations. The method consists of systems for remembering, characterized by abbreviations, symbols, and figure alphabets, which represent words or phrases.[2/]

Induction and deduction are two of the higher mental processes and may be somewhat more difficult for high school pupils to grasp. In essence, one is the reverse of the other, for deduction is reasoning from the general to the specific, while induction is reasoning from the specific to the general. More broadly stated, deduction is reasoning from general observations to specific conclusions, whereas induction is reasoning from specific, detailed facts to generalized statements of conclusions.[3/] Induction is the scientific method, where many

---

1/ James, William, Principles of Psychology, Vol. I, Henry Holt & Company, New York, 1927, pp. 653-656.

2/ Ibid, pp. 668-673.

3/ Dewey, John, How We Think, D. C. Heath & Company, New York, 1910, pp. 79-82.

detailed, specific data are collected and tabulated to produce a general scientific law. The fictitious Sherlock Holmes, detective extraordinary, gives us an example, serviceable if not scientific, of the profitable use of the deductive method; he used his remarkable powers of observation to deduce certain specific facts about his associates.

The case study method is used to present actual true anonymous life situations to pupils and to permit them to appraise the situation, offer and evaluate suitable and proper solutions. It is the method often used in group guidance, but would bring out the working principles involved in association. It is an improvement on the lecture and textbook methods of instruction where the pupils are often the passive listeners and the instructor the more conscientious worker.[1/]

The other listed general activities are largely self-explanatory, and the variety and interest of more specific activities is limited only by the initiative and originality of the curriculum-builders.

1/ Brewer, John M., et al., Case Studies in Educational and Vocational Guidance, Ginn and Company, New York, 1926, introduction, pp. xv-xviii.

II. PROBLEMS FOR FURTHER RESEARCH

Although association tests are of extreme importance in clinical use with atypical subjects, the subjectivity inherent in the association test inhibits the use of group association tests on a wide educational scope. Possible exceptions to this generalization are in the case of reading readiness testing, where a suitable group test might be devised; and in guidance work, although here, too, the testing would be laborious and time-consuming.

A completely objective group test for association ability is extremely difficult to construct. This is due to the great variety of responses which the stimuli arouse in the mind of each individual. Greater objectivity might be obtained by means of multiple choice test items or completion items, but these largely preclude the concept of free association. An association test modeled along the concepts of the Minkus Completion Test, found in the Stanford-Binet Intelligence Scale,[1/] offers distinct possibilities for refinement of the association test. In the Minkus Completion Test, sentences containing blank spaces which permit of a very limited choice of possible correct completing words, produced from the ideas of the subject, definitely limit the association word. Here frequency of responses of various association words could be used as a

---

1/ Terman, L.M., and Merrill, Maud A., Measuring Intelligence, Houghton Mifflin Company, 1937, p. 271.

Boston University
School of Education
Library

basis of tabulation and evaluation of "good" association responses. This method, if adapted to specific testing situations, might offer effective measurement of association in education as well as in the clinical field.

During the study the following topics for further possible research were noted:

1. Further investigation of association at the high school level, in the field of English and in other subject-matter areas.

2. Comparison of association abilities in various major school departments; for example, while correcting the tests, the examiner was conscious of somewhat higher association scores achieved fairly consistently by pupils in the science major divisions, but he was unable to confirm this hypothesis.

3. Modification of the test used in this study, with a view to increasing the objectivity of the test. Development of other types of association tests.

4. Adaptation of the Minkus Completion Test for testing association. The author believes that this test offers very definite possibilities for such a program.

5. Building of a more detailed curriculum for teaching association in English, modeled along the principles set forth in this study.

6. Construction of a limited detailed curriculum for improving association ability of high school pupils, in other subject-matter areas as well as in the field of English.

7. Directed teaching of an association curriculum to test in practice the validity of the conclusions given in this study.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

Aiken, Catherine, Methods of Mind Training, Harper & Brothers, New York, 1896.

* Bain, Alexander, The Senses and the Intellect, J. W. Parker & Son, Publisher, London, 1855.

Brett, G. S., "Association and Act Psychology," Psychologies of 1930, ed Carl Murchison, Clarke University Press, Worcester, Mass., 1930.

* Brewer, John, et al., Case Studies in Educational and Vocational Guidance, Ginn & Company, New York, 1926.

* A Cyclopedia of Education, Vol. I, ed. Paul Monroe, the MacMillan Company, 1911.

Dewey, John, How We Think, D. C. Heath & Company, New York, 1910.

Greene, H. A., Jorgensen, A. N., and Gerberich, J. R., Measurement and Evaluation in the Secondary School, Longmans, Green & Company, New York, 1946.

* Hartley, David, Observations on Man, J. Johnson, Publisher, London, 1791.

Hovious, Carol, Flying the Printways, Experience through Reading, D. C. Heath Company, Boston, 1938.

* James, William, Habit, Henry Holt & Company, New York, 1890.

* James, William, Principles of Psychology, Vol. I, Henry Holt & Company, New York, 1927.

Jones, E. S., Practical English Composition, Century Company, New York, 1931.

Judd, C. H., Psychology of Secondary Education, Ginn & Company, New York, 1927.

---

* These sources were relevant to the study. Unstarred references were used to give clearer understanding of the problem.

BIBLIOGRAPHY (continued)

* Kelley, Truman L., and Kray, A. C., Tests and Measurements in the Social Sciences, Charles Scribner's Sons, New York, 1934.

* Kelley, W. A., Educational Psychology, The Bruce Publishing Company, New York, 1933.

Locke, John, An Essay Concerning Human Understanding, George Routledge & Sons, London, n.d.

* Peterson, Joseph, Early Conceptions and Tests of Intelligence, World Book Company, Chicago, 1925.

* Stillman, Bessie W., Training Children to Study, D. C. Heath & Company, Boston, 1939.

Tanner, W. M., Composition and Rhetoric, Ginn & Company, New York, 1922.

Terman, L. M., and Merrill, Maud A., Measuring Intelligence, Houghton Mifflin Company, 1937.

* Thorndike, E. L., The Teachers World Book, Bureau of Publication, Teachers College, Columbia University, New York City, 1921.

Tressler, J. C., English in Action, Book One, D. C. Heath & Company, New York, 1929.

Tressler, J. C., English in Action, Course Two, D. C. Heath Company, New York, 1940.

B. PERIODICAL ARTICLES

Derrig, Dorothea, "Extending the Scope of Pupils' Experience," National Elementary Principal, 18, 1939.

* Fauquier, William, "The Measurement of Attitudes of Delinquent and Normal Boys by Use of an Associational Techniques," Child Development, 10, 1939.

* Glenn, T. H., "Clear Thinking Through English Teaching," California Journal of Secondary Education, 11, 1936.

Goodson, M. R., "Improvement of Pupil Thinking," Education Administration and Supervision, 25, 1939.

* Ibid.

BIBLIOGRAPHY (continued)

* Hargan, James, "The Relation of Continuous Association Scores to Mental Age of Adults," The Psychological Clinic, Vol. XXI, No. 1, March-May, 1932.

James, Benjamin B., "Formal Discipline Again," School and Society, 14, 1921.

* Lorge, I., and Thorndike, E. L., "The Value of the Responses in a Completion Test as Indications of Personal Traits," Journal of Applied Psychology, 25, 1941.

* Miller, C. R., "Teaching Pupils How to Think," Nation's Schools, 21, 1938.

Raubicheck, C. W., "Can Imagination Be Taught?" High Points, 20, 1938.

* Tendler, A. D., "Associative Tendencies in Psychoneurotics," Psychological Clinic, Vol. XXII, No. 2, 1933.

* Thorndike, E. L., "Significance of Responses in the Free Association Test," Journal of Applied Psychology, 16, 1932.

* Traxler, Arthur E., "The Relation Between Rate of Reading and Speed of Association," Journal of Educational Psychology, 25, 1934.

* Woodrow, R. S., and Lowell, F., "Children's Association Frequency Tables," Psychological Monographs, Vol. 22, No. 5,

* Wyatt, H. G., "Free Word Association and Sex Difference," American Journal of Psychology, 44, 1932.

C. OTHER SOURCES

Bourdon, B., "Contributions à l'étude de l'individualité dans les associations verbales," in Wundt, Philosophische Studien, Band 19, Leipzig, 1902.

Dutton, Eugene, "Association and Dissociation," Unpublished master's thesis, University of Chicago, 1940.

Halévy, Élié, "De l'association des idées," in Congrès international de philosphie, Philosophie générale et metaphysique, Paris, 1900.

* Ibid.

BIBLIOGRAPHY (continued)

Horn, E., A Basic Writing Vocabulary, University of Iowa Monographs in Education, First Series, No. 4, April, 1921.

* Kent, G. H., and Rosanoff, A. J., Free Association Test, Manual of Psychiatry reprint, sixth edition, John Wiley & Sons, New York, 1927.

* Marden, Avis J., "Associational Reading Ability of the Seventh Grade," Unpublished master's thesis, Boston University, 1941.

Tilton, John, The Relation Between Associations and the Higher Mental Processes, Teachers College Series, v. 218, Bureau of Publications, Columbia University, New York, 1926.

* Wheat, Leonard B., Free Associations to Common Words, Teachers College Series, v. 498, Bureau of Publications, Columbia University, New York, 1931.

* Ibid.

APPENDIX

DATA COMPILED FOR THE STUDY

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
1	100	11	17-9	15-0	78	75	114
2		9			72	70	84
3	105	11	16-3	15-9	88	85	128
4					72	71	76
5	90	11	16-11	16-6	72	75	76
6		9	14-4		82	80	112
7		12	19-3		75	75	120
8	95	12	17-4	14-3	75	70	98
9	98	11	16-3	14-9	75	70	126
10		9	15-10		85	71	86
11	68	11	20-9	10-3	65	65	82
12	87	11	16-9	13-0	82	80	110
13		12	17-4		88	92	124
14	102						96
15	84	12	18-7	12-7	85	85	60
16	88	12	17-4	13-3	85	85	126
17					75	75	80
18		11	17-9		78	73	104
19	104	11	15-1	15-3			128
20		9	14-7		75	65	112
21		12	18-1		75	70	114
22	112	12	17-6	16-10	90	90	110

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
23	103	11	16-5	15-6	74	74	92
24		9	14-8		72	72	74
25	111	11	17-1	16-8			120
26		9	14-5		92	88	84
27	104	12	17-6	15-7	90	88	126
28		11	16-2				128
29	102	11	17-10	15-3	75	70	124
30		9	14-10		85	75	62
31	94	11	16-7	14-1	76	80	116
32		9	15-4		75	70	92
33		9	13-11		88	73	52
34					75	75	106
35		9	14-8		85	80	128
36	121	12	18-4	18-1	75	82	100
37		11	16-3		80	78	118
38	125	11	17-1	18-9			106
39		9	14-8		85	81	90
40		11	16-9		75	70	120
41		9	15-0		75	75	108
42	101	12	19-4	15-1	85	90	118
43	99	12	17-9	14-11	80	80	118
44		12	17-9		75	75	96
45		9	14-3		75	72	98
46	86	11	17-0	12-10			122

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
47					75	75	128
48		9	13-10		85	85	128
49	95	9	16-15	14-3	85	85	108
50	99	11	16-3	14-11			56
51	98	12	17-7	14-9	80	78	100
52		9	15-9		70	71	122
53		9	14-8		75	73	60
54	116	11	16-2	17-4	85	80	54
55		9	13-11		72	71	100
56	117	12	17-9	17-6	75	78	116
57					75	65	122
58	102	12	17-6	15-3	78	78	120
59		9	14-1		72	71	78
60		11	16-8		85	75	130
61	95	11	17-1	14-3	85	80	126
62	125	12	18-2	18-9	75	78	104
63	129	11	16-4	19-5			90
64		9	14-0		88	83	52
65		9	14-1		85	88	122
66		12	18-6		65	75	86
67	111	12	17-7	16-8	82	85	120
68	130	11	16-8	19-6			114
69	124	11	16-11	18-7			130
70	110	11	16-11	16-6			122

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
71	115	11	16-8	17-3			106
72					50	50	126
73	99	12	18-8	14-10	65	75	76
74	95	11	16-4	14-3	65	68	124
75	100	12	17-5	15-0	85	85	118
76		11	16-5		78	75	112
77	118	11	16-9	17-8	85	90	130
78					72	75	114
79		9	13-5		95	90	88
80	98	12	17-3	14-9	78	75	112
81	87	11	16-1	13-0	75	75	104
82	104				80	75	110
83	95	11	16-3	14-3			108
84	94	12	18-3	14-1	85	75	108
85	112	12	18-4	16-10	78	85	104
86	132	11	16-6	19-10			104
87	94	12	17-4	14-1	75	75	78
88		9	14-7		95	89	126
89		12	18-9		76	74	66
90					65	65	124
91					78	69	60
92		9	14-10		78	80	110
93	90	11	16-7	13-6	75	75	100
94	96	11	17-9	15-5	75	75	62

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
95	89	12	16-10	13-4	85	80	102
96					70	75	96
97					70	65	106
98					80	65	130
99	96	12	17-6	14-4	80	80	126
100	97	12	17-7	14-6	85	85	94
101	106	11	16-10	15-11			110
102	105	11	16-11	15-9	85	75	130
103		9	14-4		78	80	122
104	95	12	18-1	14-3	78	78	90
105		9	14-7		85	85	122
106		9	15-0		75	65	126
107					65	65	120
108	136	12	17-9	20-5	85	85	108
109	95	12	17-5	14-3	85	85	128
110	94	11	16-3	14-1	75	70	126
111	122	11	16-11	18-3	78	80	126
112	95	12	17-9	14-3	85	88	104
113	105	12	17-5	15-9	75	82	96
114	105	11	17-10	15-9	65	75	90
115	110	12	17-5	16-6	78	82	92
116		9	14-5		85	75	42
117	119	12	17-7	17-10	82	85	106
118					78	65	110

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
119	96	11	16-8	14-4	85	80	118
120		9	14-4		85	80	96
121	87				78	78	112
122		9	15-0		85	88	130
123	117	12	18-7	17-6	82	85	110
124		9	15-6		75	65	120
125		9	14-7		92	80	62
126		9	14-1		92	85	90
127					78	65	80
128		12	19-0		70	74	122
129		9	14-9		73	73	106
130		9	14-5		75	75	128
131	100	11	18-11	15-0	78	80	120
132	97	10	15-1	14-0	75	75	120
133	105				65	78	104
134	101	12	17-1	15-2	85	88	112
135		11	16-9		85	85	96
136	97	12	18-9	14-6	75	85	124
137		9	14-7		72	75	114
138		12	17-9		65	75	80
139	108	11	17-0	16-2			120
140	95	11					130
141	92	11	16-10	13-10			126
142		9	15-2		75	75	126

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
143	125	12	17-9	18-9	80	75	112
114		11	17-1		67	72	114
145					88	75	132
146	107	12	17-7	16-0	85	80	98
147		9	15-0		95	81	132
148		9	14-8		65	70	106
149		9	14-6		85	85	124
150	113	11	17-3	16-11	75	75	126
151		11	16-6		80	78	106
152	96	11	16-1	14-2	75	70	104
153		9	13-11		65	72	96
154		9	15-6		65	85	130
155	106	9	16-9	15-10	60	50	114
156	106	12	17-3	15-10	85	85	126
157		9			65	70	46
158	119	11	16-7	17-10			96
159		12	17-1		85	80	122
160	96	12	17-8	14-5	78	85	124
161		9	15-1		85	85	130
162	98	11	17-1	14-9			110
163	93	12	18-10	13-11	75	70	94
164		9	16-0		75	78	128
165		11	16-6		90	86	118
166		9	14-6		88	81	116

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
167		9	15-4		75	75	128
168	122	11	16-4	18-2	75	75	128
169		11	16-0		78	75	100
170	112	12	17-7	16-9	82	85	104
171					74	74	128
172		12	18-1		80	75	124
173		9	14-7		75	78	116
174		9	16-0		74	74	124
175	116	12	17-11	17-4	88	88	114
176		11	16-4				82
177		12	17-6		75	75	122
178	108	11	16-6	16-3			80
179	95	11	16-11	14-3	78	78	124
180	120	12	17-10	18-0	85	85	86
181		9	15-1		75	73	66
182	105	12	17-1	15-9	80	75	70
183		12	17-3		75	70	52
184	103	9			85	80	124
185	67	9			75	70	96
186	120	10			75	75	112
187	101	9			75	80	122
188	73	9			75	80	112
189	101	9			75	70	76
190	96	9			75	80	126

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
191	102	9			75	75	126
192	92	9			75	70	98
193	97	9			75	70	116
194	131	10			85	85	118
195	121	10			85	80	116
196	95	9			75	70	82
197	106	9			85	85	128
198	102	9			75	70	124
199	120	10			85	80	132
200	108	9			75	80	120
201	107	9			75	75	88
202	93	9			85	75	60
203	98	9			75	70	80
204	98	9			75	75	112
205	129	10			85	80	122
206	100	9			75	75	114
207	130	10			85	86	130
208	144	10			85	85	130
209	132	10			75	85	126
210	139	10			85	89	132
211	118	10			95	87	132
212	129	10			85	80	124
213	109	9			75	75	120
214	115	10			75	75	130

Pupil Number	I.Q.	School Grade	C.A.	M.A.	English Comp. Grade	General English Grade	Association Test Score
215	160	10			95	91	124
216	148	10			85	85	132
217	136	10			85	85	128
218	147	10			95	87	130
219	120	10			75	80	88
220	121	10			75	85	128
221	113	9			75	80	126
222	143	10			95	89	114
223	105	9			75	75	112
224	144	10			95	87	132
225	135	10			85	85	116
226	112	9			75	85	132
227	135	10			85	85	116
228	133	10			85	85	122
229	135	10			95	91	128

BOSTON UNIVERSITY
1 1719 02544 3609

ACCOPRESS BINDER
BF 250-P7-EMB
Made By
ACCO PRODUCTS, INC.
Ogdensburg, N. Y., U.S.A.